

DESCRIPTION OF TWO NEW SPECIES OF FOSSIL CONIFEROUS
WOOD FROM IOWA AND MONTANA.

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(With Plates II, III.)

The material upon which the following observations are based was sent by the Rev. E. M. Glasgow, of Estherville, Iowa, to Mr. W. J. McGee, of the U. S. Geological Survey, and by him sent to the U. S. National Museum for examination. The specimens are eight in number and are very small fragments, the larger being but 6^{cm} in length and 4^{cm} in diameter.

Before passing to the description of the species it may be well to speak briefly of the arguments in favor of conferring generic and specific names upon woods of this character. It has been objected to on the ground that the characters available for the satisfactory identification of genera or species are so vague and imperfect that it is not worth while to confer names upon such material. As an example of this view may be cited Sir William Dawson's recent paper, "Note on Fossil Woods and other Plant Remains, from the Cretaceous and Laramie Formations of the Western Territories of Canada,"* in which no specific names or descriptions are given, and the genera are compared to a few typical living genera.

Now, all students who have given their attention to the investigation of the internal structure of fossil plants are willing to admit that their so-called genera and species are not as definitely circumscribed nor as fully characterized as they could be if living, but it does not seem to them that they are on this account any the less valuable as furnishing marks for stratigraphic identification or data for the elucidation of problems of development. The objects of this study are twofold: First, to supply a basis for supplementing a history of the evolution of the vegetable kingdom, and, second, to give assistance to the stratigraphic geologist. And in either case, if the facts obtained are to be made use of, the specimens studied must be described and named, in order that subsequent workers may be able to recognize and speak intelligibly of the results attained. The further objection to naming or describing woods, that they are probably already named from other parts, such as leaves or fruits of the same plant, is even less defensible than the first, for it is manifestly impossible, except in rare instances, to correlate all parts of a fossil plant. It would, of course, be desirable to know the complete life-history of any species, but until all the organs are found in actual contact it is not safe to assume identity, and it is also seemingly undesirable to select one series of data to the exclusion of the other.

* Trans. Roy. Soc. Canada, Sec. iv, 1887, pp. 31-37.

The specimens in this collection have all proved to be coniferous and to belong to the genus *Cupressinoxylon*.* The first species I have named, in honor of the collector:

Cupressinoxylon Glasgowii, n. sp. Plate II, figs. 1-5.

Diagnosis.—Annual rings very sharply marked, 3 to $4\frac{1}{4}$ mm broad tracheids in the summer wood provided on the radial walls with one or two series of very large bordered pits; medullary rays numerous, of 10 to 30 superimposed cells in a single series, resin ducts moderate in size, numerous, of a chain of short cells.

Locality, Emmet County, Iowa. Horizon probably Cretaceous.

MICROSCOPIC ANALYSIS.

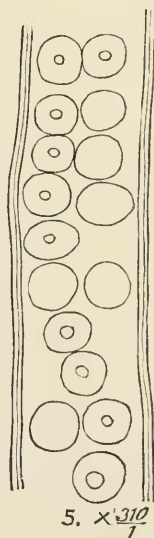
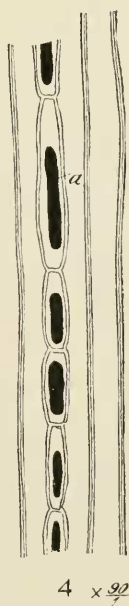
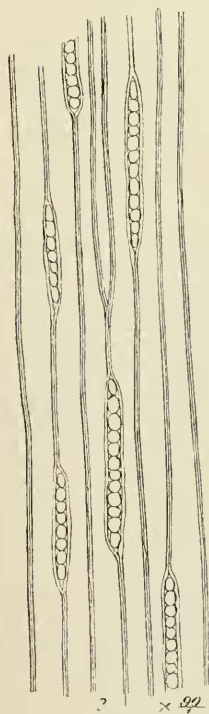
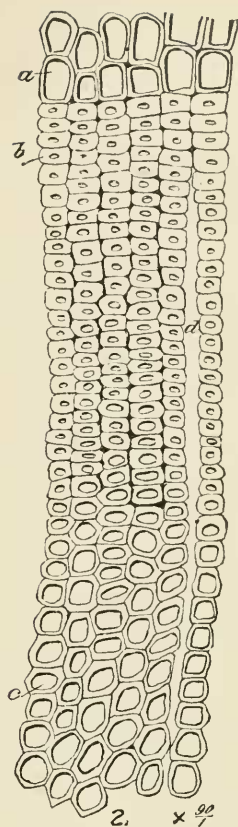
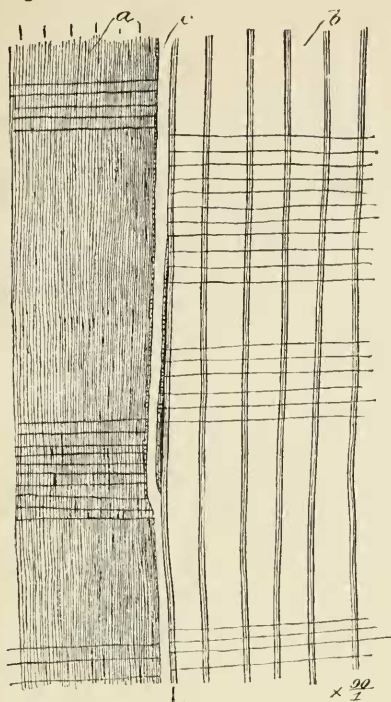
Transverse section.—The annual rings as observed in this section are very apparent to the naked eye, the actual ring or line of separation being a brown band nearly a millimeter in width, while the whole width of a ring, as stated above, is often more than 4 mm. Under the microscope the cells are shown to be arranged in strict radial rows, and the band above mentioned is found to consist of a layer of from 18 to 20 cells more or less completely lignified. In the outer layers of this lignified band of fall-wood the lumen of the cells is reduced to a minimum. The lumen is in the form of an ellipse of which the long diameter is less than .01 mm and the short diameter about .005 mm. In the immediate following layer of spring-wood the cells are very large and thin-walled, measuring .08 mm in long, and .05 mm in short, diameter. In the summer wood the cells become smaller and more nearly hexagonal in outline and pass abruptly into the band of fall-wood.

Radial section.—In this section, as in the transverse, the demarcation between fall and spring wood is very clearly marked (Pl. II, figs. 1, 4, 5.) The walls of the cells in the spring and summer wood are the ones provided with bordered pits, and in these they seem not to have been very abundant, or at least are not preserved in a manner capable of demonstration. These pits are usually arranged in two parallel rows, although in some cases there is but one row, when it occupies the center of the cell. The pits are large, and when in two rows take up nearly the entire width of the cell. The diameter of the outer circle in extreme cases fully .0250 mm, the average being about .0200 mm; the diameter of the inner circle is only .0025 to .0040 mm.

The medullary rays are observed to be numerous, with the individual cells very long. The individual cells are not, however, very high, and they are thin-walled. They have not been provided with bordered pits, or at least none are preserved.

The resin-ducts have been moderately numerous. They are composed of a chain of short thin walled cells from .15 mm to .25 mm in length, and

* Many authors write *Cupressoxylon*, but as I regard *Cupressineae* as the root from which the word is formed I prefer to write *Cupressinoxylon*.



Cupressinoxylon Glasgowii. New species of fossil wood. (Pages 6, 8.)
(Explanation of plate on page 8.)

